

IN THE CLAIMS:

A Listing of the Claims is as follows:

1. (Currently Amended): A rechargeable battery, comprising
at least one anode;
at least one cathode, each said cathode being in opposing spaced relationship to each
said anode;
two layers of differing porous separators/binders intermediate each opposing anode
and cathode to maintain said ~~spacing and to bind each anode to each cathode~~ opposing spaced
relationship;
a non-aqueous electrolyte filling said pores of said layers of separator/binder;
wherein: a first separator/binder comprises a mixture of polymer P₁ and a particulate
material M₁,
a second separator/binder comprises a mixture of polymer P₂ and a particulate
material M₂,
polymer P₁ is soluble to a degree for forming a polymeric solution in a solvent S₁,
polymer P₂ is soluble to a degree for forming a polymeric solution in a solvent S₂,
polymer P₁ remains solid in the presence of solvent S₂,
polymer P₂ remains solid in the presence of solvent S₁,
particulate material M₁ remains solid in the presence of solvent S₁,
particulate material M₂ remains solid in the presence of solvent S₂, and
said opposing spaced relationship of each cathode to each anode is maintained by
~~the binding of each anode~~ being bound to the first separator/binder, the first
separator/binder being bound to the second separator/binder, and the second separator/binder
being bound to each cathode ~~provided by polymers P₁ and P₂.~~

2. (Original): A rechargeable battery according to Claim 1, wherein said at least one anode and said at least one cathode are stacked as a prismatic stacked structure.

3. (Original): A rechargeable battery according to Claim 1, wherein said battery has one anode and one cathode, and said anode and cathode are formed as a cylindrical wound structure.

4. (Original): A rechargeable battery according to Claim 2, wherein a plurality of anodes and cathodes are stacked, and the stacking sequence is a repetition of (anode)-(first separator/binder)-(second separator/binder)-(cathode)-(first separator/binder)-(second separator/binder)-(anode).

5. (Original): A rechargeable battery according to Claim 2, wherein a plurality of anodes and cathodes are stacked, and the stacking sequence is a repetition of (anode)-(first separator/binder)-(second separator/binder)-(cathode)-(second separator/binder)-(first separator/binder)-(anode).

6. (Previously Presented): A rechargeable battery according to Claim 2, wherein a plurality of anodes and cathodes are stacked, and the stacking sequence is a repetition of (cathode)-(first separator/binder)-(second separator/binder)-(anode)-(second separator/binder)-(first separator/binder)-(cathode).

7. (Original): A rechargeable battery according to Claim 3, further comprising a core upon which said anode and cathode are wound to form said cylindrical wound structure.

8. (Original): A rechargeable battery according to Claim 7, wherein the shape of the core is one selected from: a cylinder and a hexahedron.

9. (Original): A rechargeable battery according to Claim 1, wherein solvent S_1 is of the hydrophobic type, and solvent S_2 is of the hydrophilic type.

10. (Original): A rechargeable battery according to Claim 1, wherein solvent S_1 and solvent S_2 are of the hydrophobic type, or solvent S_1 and solvent S_2 are of the hydrophilic type.

11. (Original): A rechargeable battery according to Claim 9, wherein the hydrophobic solvent S_1 is one selected from: heptane, tetrahydrofuran, DMF, and DMSO, and the hydrophilic solvent S_2 is one selected from: methanol, ethanol, and methanol/chloroform.

12. (Original): A rechargeable battery according to Claim 10, wherein the hydrophobic solvents S_1 and S_2 are selected from: heptane, tetrahydrofuran, DMF,

and DMSO, or

the hydrophilic solvents S_1 and S_2 are selected from: methanol, ethanol, and methanol/chloroform.

13. (Original): A rechargeable battery according to Claim 1, wherein polymer P_1 is at least one selected from: PE, PP, PVC, polystyrene, and PAN; and polymer P_2 is at least one selected from: PEO, PPO, polycarbonate, PMMA, and PVP.

14. (Original): A rechargeable battery according to Claim 1, wherein particulate materials M_1 and M_2 are selected from: silicon dioxide, magnesium oxide, calcium oxide, strontium oxide, barium oxide, boron oxide, aluminum oxide, silicon oxide; synthetic or natural zeolites, borosilicate, calcium silicate, aluminum polysilicates, wood flours, glass microbeads, glass hollow microspheres, polyester fibers, nylon fibers, rayon fibers, acetate fibers, acrylic fibers, polyethylene fibers, polypropylene fibers, polyamide fibers, polybenzimidazole fibers, borosilicate glass fibers, and wood fibers.

15. (Original): A rechargeable battery according to Claim 14, wherein particulate materials M_1 and M_2 are the same or M_1 and M_2 are different.

16. (Original): A rechargeable battery according to Claim 1, wherein in the first separator/binder the percent by weight of the particulate material is between 50% and 98%; and in the second separator/binder the percent by weight of the particulate material is

between 50% and 98%.

17. (Original): A rechargeable battery according to Claim 1, wherein
in the first separator/binder the percent by weight of the particulate material is
between 80% and 97%; and
in the second separator/binder the percent by weight of the particulate material is
between 70% and 92%.

18. (Original): A rechargeable battery according to Claim 13 wherein polymer P₁
and/or polymer P₂ are/is a combination of two or more polymer materials.

19. (Original): A rechargeable battery according to Claim 14 wherein particulate
material M₁ and/or particulate material M₂ are/is a combination of two or more particulate materials.

20. (Original): A rechargeable battery according to Claim 1, wherein the first
separator/binder is of a thickness in the range of 10-200 μm , and
the second separator/binder is of a thickness in the range of 10-200 μm .

21. (Original): A rechargeable battery according to Claim 1, wherein the first
separator/binder is of a thickness in the range of 30-60 μm , and
the second separator/binder is of a thickness in the range of 30-60 μm .